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भारतीय मानक

चमड़े की फिनिशिंग के लिए वेक्स-इमल्शन — विशिष्टि
(पहला पुनरीक्षण)

Indian Standard

WAX-EMULSION FOR LEATHER
FINISHING — SPECIFICATION
(*First Revision*)

ICS 59.140.10

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BUREAU OF INDIAN STANDARDS
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Price Group 3

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Leather, Tanning Materials and Allied Products Sectional Committee had been approved by the Chemical Division Council.

Wax-emulsions manufactured from various waxes are readily available in the market and are extensively used as one of the leather finishing auxiliaries. The main use of wax-emulsion is to impart smoothness, suppleness, glaze the top coat, prevent sticking of leather while plating, increase the water-repellent properties, give slight waxy feel to the finished leather surface, etc.

This standard was originally published in 1986. In this revision, the requirement on pentachloro phenol (PCP) has been introduced keeping in view of the demand for eco-friendly inputs from the leather industry.

The composition of the Committee responsible for formulation of this standard is given in Annex H.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

WAX-EMULSION FOR LEATHER FINISHING — SPECIFICATION

(*First Revision*)

1 SCOPE

This standard prescribes the requirements, and methods of sampling and test for wax-emulsion for leather finishing.

2 REFERENCES

The standards listed below are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
4905 : 1968	Methods of random sampling
14575 : 1999	Determination of pentachlorophenol (PCP) in leather — Method of test

3 REQUIREMENTS

3.1 Description

The material shall be manufactured from hard or soft bleached waxes emulsified with suitable emulsifying agent. The material shall be a viscous liquid or an aqueous colloidal dispersion of waxes and other suitable material required for the purpose. It shall be free from gritty material and mould growth.

3.2 Sediment

The material shall not contain more than one percent sediment, when tested as prescribed in Annex A.

3.3 Stability

The material shall be stable emulsion. It shall exhibit no gelling, creaming which is dispersable on freezing when kept in closed containers at any temperature between 10°C and 50°C.

3.4 Emulsion Characteristics

The material shall form a ready emulsion in hot or cold water in any dilution.

3.5 Tackiness Test

The dried surface of the leather piece shall be non-tacky, when tested as prescribed in Annex B.

3.6 The material shall also comply with the requirements given in Table 1.

**Table 1 Requirement for Wax-Emulsion for
Leather Finishing**
(*Clause 3.6*)

Sl No.	Characteristic	Requirements	Method of Test, Ref to Annex (4)
(1)	(2)	(3)	(4)
i)	Total solid content of the material, percent by mass, <i>Max</i>	20.0	C
ii)	Melting point of the total solid, °C, <i>Min</i>	55	D
iii)	Ash content of the total solid, percent by mass, <i>Max</i>	1.0	E
vi)	PCP content ¹⁾ , mg/kg	5	F

¹⁾Calculated on moisture free basis.

4 PACKING AND MARKING

4.1 Packing

The material shall be packed in glass or plastic containers or other containers as agreed to between the purchaser and the manufacturer.

4.2 Marking

The following particulars shall be clearly indicated on the outside of the containers:

- a) Manufacturer's name and/or its trade-mark, if any;
- b) Net mass of the material;
- c) Name of the material;
- d) Batch/Code No.; and
- e) Month and year of manufacture.

4.2.1 BIS Certification Marking

The containers may also be marked with Standard Mark.

4.2.1.1 The use of the Standard mark is governed by the provision of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5 SAMPLING

The method of drawing representative samples for tests

and the criteria for conformity shall be as prescribed in Annex G.

ANNEX A

(Clause 3.2)

DETERMINATION OF SEDIMENT

A-1 PROCEDURE

Shake the wax-emulsion for leather finishing (about 200 ml), well to get a homogeneous mixture. Take a suitable volume of the material and filter through a sintered glass crucible or a Whatman filter paper No. 42 or its equivalent with proper stirring. Dry the residue

to constant mass at $100 \pm 5^\circ\text{C}$. Alternatively, centrifuge a suitable volume of the wax-emulsion for leather finishing, for 15 min at approximately 4 000 rev/min. Decant all the supernatant layer and transfer the sediment to a filter paper or crucible. Dry to constant mass at $100 \pm 5^\circ\text{C}$. Express the results in percentage mass per volume basis.

ANNEX B

(Clause 3.5)

DETERMINATION OF TACKINESS

B-1 PROCEDURE

B-1.1 Leather crust upper piece of size 200×200 mm shall be used for testing. Clean the grain surface with a cloth or brush to remove any adhering dust particles. Apply the wax-emulsion for leather finishing, in a film to the smooth grain surface using a rag or brush, after 2 min place the leather piece which has been allowed to dry for 5 to 10 min on the pan of a suitable physical

balance and counterpoise it with weights. Place an additional weight of 2.5 kg and press the treated surface with thumb till the two pans of the balance are counterpoised. Keep the thumb in this position for 1 min and then slowly release.

B.1.2 There shall be no sign of stickness of the thumb. The thumb impression, if produced, shall be such that it shall be wiped out with a cloth or brush.

ANNEX C

[Table 1, Sl No. (i)]

DETERMINATION OF TOTAL SOLID CONTENT

C-1 PROCEDURE

Weigh about 20 g of the wax-emulsion for leather finishing, in a stainless steel, glass or porcelain container of not more than 10 cm diameter with a lid. Place the container on a steam-bath without the lid till the bulk of volatile matter is evaporated off. Dry the residue at $100 \pm 5^\circ\text{C}$ in an oven for 4 h or more. Cool in a desiccator and weigh. Repeat the heating, cooling and weighing till two consecutive readings at an interval of 1h are constant.

C-2 CALCULATION

Total solid content, percent by mass = $100 \times \frac{M_2}{M_1}$

where

M_2 = mass of the residue after drying, in g; and

M_1 = mass of the wax-emulsion for leather finishing, taken for the test, in g.

ANNEX D

[Table 1, Sl No. (ii)]

DETERMINATION OF MELTING POINT OF THE TOTAL SOLID**D-1 PROCEDURE**

Fill a capillary tube with a few milligrams of the total solid as obtain in C-1 so that a column of the material

about 5 mm high is obtained. Pack the material by tapping lightly on a rigid surface and determine the melting point in any standard melting point apparatus with a thermometer graduated at each 0.1°C.

ANNEX E

[Table 1, Sl No. (iii)]

DETERMINATION OF ASH CONTENT OF TOTAL SOLID**E-1 PROCEDURE**

Weigh about 20 g of the material in a nickel or stainless steel crucible (60 to 80 ml capacity) and evaporate on a steam-bath. Put the crucible in a muffle furnace and raise temperature gradually. Raise the temperature of the furnace from red hot to 700 to 800°C and heat for about 2 h. Cool in a desiccator and weigh.

E-2 CALCULATION

Ash content of total solid, per cent by mass = $100 \times \frac{M_2}{M_1}$
where

M_2 = mass of the ash, in g; and

M_1 = mass of the total solid equivalent to the mass of material taken for the test (*see* C-2), in g.

ANNEX F

[Table 1, Sl No. (iv)]

DETERMINATION OF PENTACHLORO PHENOL (PCP)**F-1 PROCEDURE**

F-1.1 Transfer about 5 g of the wax-emulsion for leather finishing, into a separating funnel of about 250 ml capacity along with 100 ml water. Add 15-25 ml of sulphuric acid 10 percent w/v aqueous solution and ensure that the pH of the contents is acidic. Then carry out liquid-liquid extraction using hexane, analytical grade, as the solvent. At first extract with about 25 ml hexane by shaking the contents thoroughly for about 15 min. Then set it aside for clear separation of the layers (*see* Note). Transfer the aqueous layer into another separating funnel and carryout three more

extractions of the aqueous layer with hexane of 25 ml each time in the same manner explained earlier.

NOTE — In case of any emulsion being noticed, break the same with the addition of 20-30 ml saturated sodium chloride aqueous solution or follow the steps explained in 4.3.4.2 of IS 14575.

F-2 Combine the hexane extracts and dry it by passing through a bed of anhydrous sodium sulphate of about 10 g. The dried hexane layer is evaporated to near dryness by a rotary evaporator.

F-3 The residue is taken for acetylation. Then follow the procedure as detailed in Method A of IS 14575.

ANNEX G

(Clause 4)

SAMPLING OF WAX-EMULSION FOR LEATHER FINISHING**G-1 GENERAL REQUIREMENTS OF SAMPLING**

In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed:

- a) Samples shall be taken in a protected place not exposed to damp air, dust or soot.
- b) Instrument and container shall be clean and dry when used.
- c) Precautions shall be taken to protect the samples, the material being sampled, the sampling instruments and the containers for samples from adventitious contamination.
- d) Samples shall be placed in clean, dry and air-tight glass or other suitable containers on which the material has no action.
- e) Sample container shall be of such a size that they are almost completely filled by the sample.
- f) Each sample container shall be sealed air-tight after filling and marked with full details of sampling, the date of sampling and the year of manufacture of the material.
- g) Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

G-2 SCALE OF SAMPLING

To determine conformity of a consignment of wax-emulsion for leather finishing to this specification, samples shall be selected so as to be representative of the whole consignment. In the absence of any prior agreement between the purchaser and the manufacturer on the mode of sampling and determining the criteria of conformity, the following sampling and inspection scheme is recommended to serve as a guide.

G-2.1 Lot

All the containers in a single consignment of the material drawn from the same batch of manufacture and belonging to the same size shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture or of different sizes of containers, the containers belonging to the same batch and size shall be grouped together and each such

group shall constitute a separate lot.

G-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of the specification.

G-2.2 The number (n) of containers to be chosen from the lot (N) shall depend upon the size of the lot and shall be in accordance with col 1 and col 2 of Table 2.

Table 2 Number of Containers to be Selected for Sampling
(Clause G-2.2)

Sl No.	No. of Containers in the Lot N	Number of Containers to be Sampled n
(1)	(2)	(3)
i)	Up to 500	10
ii)	501-1 000	15
iii)	1 001 and above	20

G-2.3 These containers shall be chosen at random from the lot, in order to ensure the randomness of selection, some random number table as agreed to between the purchaser and the manufacturer shall be used. Indian Standard IS 4905 may be referred to for random selection.

G-3 PREPARATION OF COMPOSITE SAMPLE

Shake well each of the containers selected in **G-2.2** and test for sediment content. Pour out a quantity of polish such that the total quantity obtained from all the containers provides materials (about 1 000 g) sufficient for all other tests. Thoroughly mix the material drawn from all the selected containers so as to form the composite sample.

G-4 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

G-4.1 Test for the determination of sediment shall be done on the original containers from which no sample has been drawn.

G-4.2 Tests for other characteristics shall be done on the composite sample.

G-4.3 The lot shall be declared as conforming to the specification, if the test results satisfy the corresponding requirements laid down in this specification.

ANNEX H*(Foreword)***COMMITTEE COMPOSITION**

Leather, Tanning Materials and Allied Products Sectional Committee, CHD 17

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